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HUMAN RESOURCES SECTOR



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Cross-Industry Markets, 1991-1996
Human Resources Sector

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I

Introduction





Introduction

The human resources cross-industry sector report is written each year by INPUT as one of seven reports on cross-industry sectors of the U.S. information services industry. The seven cross-industry sectors are:

1. Human Resources
2. Accounting
3. Engineering and Scientific
4. Planning and Analysis
5. Education and Training
6. Office Systems
7. Other Cross-Industry

These reports are included as part of INPUT's Market Analysis Program (MAP), a planning service for information services vendors.

A

Purpose and Organization

1. Purpose

The objectives of this cross-industry report are to:

- Introduce the reader to the human resources cross-industry sector
- Identify the business and technological issues and trends that are driving the use of information services for the human resources cross-industry sector
- Forecast user expenditures during the next five years on information services for the human resources cross-industry sector
- Discuss the competitive environment and profile leading vendors in the human resources cross-industry sector



The report provides readers with insights and information that will help them:

- Review the forces shaping the market
- Develop internal corporate financial projections
- Identify new markets and product and services opportunities
- Assess the competitive trends
- Determine potential market directions
- Assist in prioritizing investments

2. Organization

This report is organized as described in Exhibit I-1.

EXHIBIT I-1

Cross-Industry Sector Report Format

- I. Introduction
 - Introduce and define each of the cross-industry sectors.
- II. Trends, Events and Issues
 - An overview of the business climate within the cross-industry sectors and the information services industry as a whole.
- III. Information Systems Environment
 - The user perspective as it relates to information systems for the cross-industry sectors.
- IV. Information Services Market Forecast
 - Presentation of the information services market forecasts by delivery mode and submode for each of the seven cross-industry sectors.
- V. Competitive Environment
 - Discussion of the competitive environment for information services within each of the cross-industry sectors, and vendor profiles.
- VI. Conclusions and Recommendations
 - A summary of risks and opportunities.
- A. Forecast Data Base
 - Detailed forecast by delivery mode, submode and each cross-industry sector. Contains a reconciliation to the previous year's Appendix B for each cross-industry sector.

Note: For definitions, the reader is referred to INPUT's *Definition of Terms* found in the overview binder of the Market Analysis Program.



Chapters I, II and III are common to all cross-industry sectors. Chapters IV, V and VI are written specifically for each of the seven individual sectors. Appendix A, Forecast Data Base, is also provided specifically for each of the seven cross-industry sectors.

B**Definitions**

This report addresses the U.S. information services industry for the human resources cross-industry sector. It includes user expenditures that are noncaptive (generally available to vendors). Many large organizations have portions of their information services requirements satisfied by internal divisions. The resulting expenditure is not available for competitive bid by the general vendor community and is not included in INPUT's projections.

1. Cross-Industry Sector Definitions

INPUT defines cross-industry information services as packaged functional application solutions that are used by multiple industry sectors. In other words, these application solutions are not verticalized. For example, accounting, and planning and analysis are functions that are similar enough across all industries to be considered markets in their own right for nonverticalized application solutions.

The human resources cross-industry sector consists of application solutions that are purchased by multiple industry sectors to serve the functions of human resources management and payroll. Examples of specific applications within these two major functions are provided in Exhibits I-2 and I-3.



EXHIBIT I-2

**Human Resources Management Systems
(HRMS) Applications**

- Employee Relations
 - Time and attendance
 - Grievances
 - Seniority
 - Union/labor relations
 - Employee demographics, history
- Benefits Administration
 - Flexible benefits
 - 401(k)
 - Profit-sharing plans
 - IRA
 - Pension plans
- Government Compliance
 - EEOC
 - AAP
 - OSHA
 - COBRA
- Manpower Planning
 - Career planning
 - Turnover analysis
 - Human resource forecasting
- Compensation Administration
 - Wage and salary structure
 - Compensation budgeting
 - Salary performance review
- Applicant Tracking
 - Applicant demographics
 - Candidate search
 - Interview, selection
- Position Control
 - Inventory
 - Budgeting
 - Forecasting



EXHIBIT I-3

Payroll Applications

- Payroll processing
- Tax filing
- Unemployment tax management
- Unemployment compensation management
- Government regulatory compliance
- Payroll management
 - Payroll administration
 - Tax reporting
 - Flexible earnings
 - Payroll history

2. Delivery Mode Definitions

Cross-industry application solutions are delivered via applications software products, turnkey systems and transaction processing services. Management support information services such as systems operations, systems integration and professional services, information delivery services and systems software are excluded from cross-industry consideration.

a. Applications Software Products

Applications software products enable a user or group of users to support an operational or administrative process within an organization. Examples include accounts payable, order entry, project management and office systems. INPUT categorizes applications software products into two submodes.

- *Industry-Specific Applications Software Products* - Software products that perform functions related to fulfilling business or organizational needs unique to a specific industry (vertical) market and sold to that market only. Examples include demand deposit accounting, MRPII, medical record keeping, automobile dealer parts inventory, etc.
- *Cross-Industry Applications Software Products* - Software products that perform a specific function that is applicable to a wide range of industry sectors. Examples include payroll and human resource systems,



accounting systems, word processing and graphics systems, spreadsheets, etc.

INPUT also forecasts the applications software products delivery mode by platform level: mainframe, minicomputer and workstation/PC.

b. Turnkey Systems

A turnkey system is an integration of equipment (CPU, peripherals, etc.), systems software, and packaged or custom application software into a single product developed to meet a specific set of user requirements. Value added by the turnkey system vendor is primarily in the software and support services provided. Most CAD/CAM systems and many small business systems are turnkey systems. Turnkey systems utilize standard computers and do not include specialized hardware such as word processors, cash registers, process control systems, or embedded computer systems for military applications.

Computer manufacturers (e.g., IBM or DEC) that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included in the appropriate software category.

Most turnkey systems are sold through channels known as value-added resellers.

- *Value-Added Reseller (VAR)*: A VAR adds value to computer hardware and/or software and then resells it to an end user. The major value added is usually applications software for a vertical or cross-industry market, but also includes many of the other components of a turnkey systems solution, such as professional services.

Turnkey systems have three components:

- *Equipment* - Computer hardware supplied as part of the turnkey system
- *Software products* - Prepackaged systems and applications software products
- *Professional services* - Services to install or customize the system or train the user, provided as part of the turnkey system sale

c. Processing Services

This delivery mode includes three submodes: transaction processing, utility processing, and "other" processing services.



- *Transaction Processing* - Client uses vendor-provided information systems—including hardware, software and/or data networks—at the vendor site or customer site to process transactions and update client data bases. Transactions may be entered in one of four modes:
 - *Interactive* - Characterized by the interaction of the user with the system for data entry, transaction processing, problem solving and report preparation; the user is on-line to the programs/files stored on the vendor's system.
 - *Remote Batch* - Where the user transmits batches of transaction data to the vendor's system, allowing the vendor to schedule job execution according to overall client priorities and resource requirements.
 - *Distributed Services* - Where users maintain portions of an application data base and enter or process some transaction data at their own site, while also being connected through communications networks to the vendor's central systems for processing other parts of the application.
 - *Carry-in Batch* - Where users physically deliver work to a processing services vendor.
- *Utility Processing* - Vendor provides basic software tools (language compilers, assemblers, DBMSs, graphics packages, mathematical models, scientific library routines, etc.), generic applications programs and/or data bases, enabling clients to develop their own programs or process data on the vendor's system.
- *Other Processing Services* - Vendor provides service—usually at the vendor site—such as scanning and other data entry services, laser printing, computer output microfilm (COM), CD preparation and other data output services, backup and disaster recovery, etc.

For a more complete discussion of INPUT's information services industry structure and market sector definitions please refer to INPUT's *Definition of Terms* found in the overview binder of the Market Analysis Program.

C

Related Reports

Related reports of possible interest to the reader include:

1. U.S. Markets

- *Cross-Industry Market Reports*
 - Accounting Sector, 1991-1996
 - Engineering and Scientific Sector, 1991-1996
 - Planning and Analysis Sector, 1991-1996



- Education and Training Sector, 1991-1996
- Office Systems, 1991-1996
- Other Cross-Industry Sector, 1991-1996
- *U.S. Application Solutions Market Analysis Report, 1991-1996*
- *U.S. Processing Services Market Analysis Report, 1991-1996*
- *U.S. Industry Sector Markets, 1991-1996* (15 reports on all major industry sectors, e.g., insurance)

2. European Markets

- *The Western European Market for Computer Software and Services, 1991-1996*
- *Trends in Processing Services—Western Europe, 1991-1996*





Trends, Events, and Issues







Trends, Events, and Issues

In this chapter INPUT provides an overview of the current business climate for the U.S. information services industry and for the delivery modes that comprise cross-industry application solutions. These are transaction processing services, applications software products and turnkey systems. The market forces and issues that are specific to this cross industry sector are dealt with in Chapters IV, V and VI of this report.

A

1990 Results

In 1990, the U.S. information services industry reached a milestone, ending the decade at about \$100 billion in size. As Exhibit II-1 shows, the industry increased in size over five times during the 1980s and is 50 times larger than it was in 1970, when the industry represented \$2 billion in user expenditures.

During 1990, the industry grew at just under 12%—from about \$90 billion to \$100 billion. As Exhibit II-2 indicates, 1990 growth rates reflect an intensification of a decline that started in 1989. The average annual growth during the first eight years of the decade was over 19%.

Worldwide, the industry continues to experience greater growth rates of close to 20%, and many U.S. vendors are experiencing growth that exceeds that of the U.S. industry as a whole. This growth is primarily due to international sales, but is also due to the focus on specific industry markets. Inflation rates and somewhat stronger economies are driving the industry to higher growth levels overseas.



EXHIBIT II-1

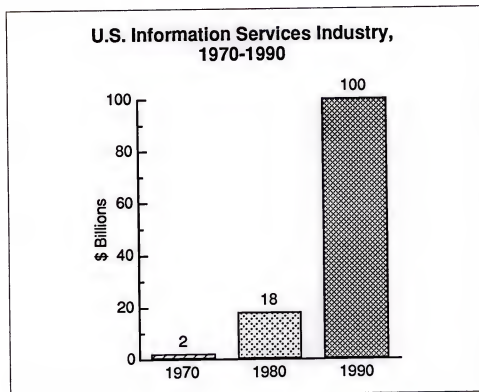
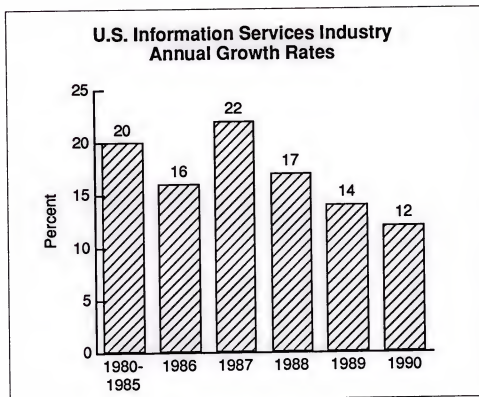


EXHIBIT II-2





On a delivery mode basis:

- The smaller systems integration, systems operations, and network services delivery modes are growing faster than the rest of the industry.
- The software products sectors grew at or slightly above the industry average.
- The larger professional services and processing services sectors, as well as the smaller turnkey systems sector, are growing slower than the industry average.

Exhibit II-3 summarizes 1990 results.

EXHIBIT II-3

U.S. Information Services Industry 1990 Results Summary

- Reached the \$100 billion milestone
- Growth 2 to 3 times the economy continues
- Growth slowed in 1990 relative to 1989
- Economy causes confusion

Growth in transaction processing services sold to cross-industry sectors fell to a level of 7% in 1990—lower than the growth during any year in the past decade. In several cross-industry sector markets—office systems and planning and analysis—growth rates for transaction processing services have been negative for the last two years.

Although there was wide variation in growth rates among the cross-industry sectors, total growth for cross-industry applications software products was 12% in 1990 compared to 21% in 1988.

User expenditure on turnkey systems sold to cross-industry sectors was only 5% higher in 1990 than 1989 and will maintain a low growth rate through 1996. The only cross-industry sector exhibiting moderately strong growth was the engineering and scientific sector with a 12% increase in 1990.



B**Driving Forces**

There are a number of fundamental forces impacting the information services industry in the 1991-1992 timeframe that will have measurable impact on the overall growth rate for the 1991-1996 five-year period covered by this market analysis report. Each force will affect the industry as a whole, as well as each of the eight delivery mode sectors used by INPUT to analyze the industry and its key trends.

Exhibit II-4 identifies six primary driving forces impacting the U.S. information services industry. The impacts are multidimensional, fundamental, and long lasting. Each is discussed in this chapter and throughout this report.

EXHIBIT II-4

**Information Services Industry
Primary Driving Forces, 1991-1996**

- The economy
- Globalization
- Influence of large vendors
- Outsourcing (buy versus make)
- Shifting technology foundation
- The changing buyer

C**Key Trends****1. Economic Impacts**

The economy, as well as the overall size of the information services industry, is a significant factor in the user expenditure level for information services and software products.

- The inflation rate of the past few years has been much more modest than in the mid-1980s. INPUT forecasts and market sizes are in current dollars—thus lower inflation means lower growth.
- Real economic growth had been modest over the past few years prior to the recession that started in late 1990. Deferred and canceled expansion plans in all industry sectors certainly slow the expansion of information services expenditures.



- The shift of information processing to smaller computers lowers the software products investment, based on current pricing practices. Quantities of software products sold increase, but revenue levels grow at more modest rates.
- The shift of information processing to smaller computers also puts pressure on processing services firms, who must then compete with downsized in-house solutions.

In 1990, a year with little to no real growth in the overall economy and inflationary growth of about 5%, the information services industry grew 12%.

- INPUT's 1990 and 1991 economic assumptions were for nominal GNP growth of 5.4%; real GNP growth was 1% or less.
- At this point in 1991 (the second quarter), the economy remains in no-growth status, with some improvement expected by late in the year. At the same time, inflationary pressures are modest. INPUT expects another modest growth year in 1991 and again in 1992. The expected slow upturn will have the following positive and negative impacts on the U.S. information services industry in the near term:
- Positive impacts include:
 - Increased motivation to buy rather than make, in particular for larger systems requirements. Response time and impact on business operations are the key criteria.
 - The interest in systems operations, which permits organizations to redeploy capital investments and lower direct headcount, is being reinforced.
 - A tight economy is helping develop interest in lower-cost solutions that come from client/server-based applications software products.
 - Decision processes are lengthened in a tight economy, causing deferral of major information systems projects.
 - With tight information systems budgets, the internal information systems staff can be favored over contracted professional services vendors, thus negatively impacting a major segment of the industry.

The purchase of processing services tends to be a long-term decision. Business levels of processing services are tied to client usage agreements and will not experience significant cutbacks due to fluctuations in the economy. An opportunity exists in the sale of incremental capacity to companies wishing to delay hardware expenditures.



Applications software products markets—both cross-industry and industry specific—have felt few if any of the effects of a slowed economy. The fact that hardware sales will slow further in the short term due to the economy is offset by pressure on profits at end-user organizations; expenditure on software that is viewed as improving productivity and/or cutting costs is likely to experience growth even with a weakened economy.

Turnkey systems vendors, however, are experiencing moderately adverse effects from the slowdown in the economy.

- Hardware purchases are put on hold—and hardware is a key ingredient of the turnkey solution.
- VARs and turnkey vendors that sell predominantly to small companies will experience the adverse effects of an economic downturn as smaller firms are the first to cut back on capital expenditures.

Turnkey and VAR service contracts and support services, however, have not been negatively impacted by a slowed economy. In fact, this portion of their business is expanding as customers look for ways to leverage the products they already have.

2. Globalization

INPUT has cited globalization as a driving force for the past three years. During that time markets have opened, vendors have expanded their international focus, and users have begun to expect global capabilities.

- The European market is making progress toward a single market. Now 1992 is less than a year away and many changes are apparent. In addition, the European market is stronger than the U.S. market, although both are suffering in the current economy.
- The worldwide orientation of the larger services vendors is verified by the investments in Europe by Computer Sciences Corporation and Digital Equipment and by the ever-expanding interest of Japanese vendors in the U.S. information services industry.

A high percentage of U.S. processing services firms' revenues is U.S.-based and is likely to remain so. For example, 95% of ADP's revenue is derived from the U.S. ADP is the largest transaction processing services firm, with revenues that are almost double the revenues of its nearest competitor.

Applications software products vendors, on the other hand, are rapidly expanding their revenues from non-U.S. sources. The following are notable examples of software firms expanding their presence in international markets:



- Computer Associates' net income from foreign operations was 28% of its total net income for 1990.
- Microsoft's international sales were 55% of total fiscal 1990 revenues.
- Oracle's international sales are now 49% of total revenues and edging up.

The largest turnkey systems vendors are also expanding their international presence. For example, Intergraph's non-U.S. revenues are now approaching 50% of total revenues.

The primary positive impact of globalization is the ability of larger vendors to balance their businesses in multiple markets with less impact from market downturns.

The primary negative impact from globalization is that it may make it harder for smaller vendors to grow and/or maintain independence.

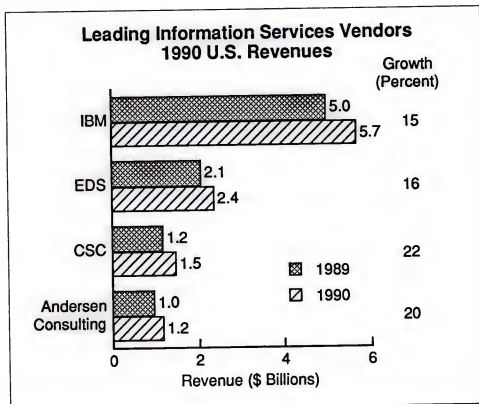
3. Influence of Large Vendors

The influence of the larger information services vendors has increased significantly over the past few years.

- The newer systems integration and systems operations sectors, though smaller than more traditional sectors such as professional services and processing services, are growing faster than the traditional sectors and are dominated by the leading vendors.
- A number of larger vendors are growing faster than the overall market. Exhibit II-5 lists four of the largest information services vendors that can be considered multi- or full-service vendors and reveals their U.S. 1989 and 1990 information services revenues. All four increased information services revenues by at least 15%, greater than industry growth as a whole.
- Certainly there are numerous smaller firms that are also growing faster than the general market, but overall, the dominance of the larger vendors is increasing.



EXHIBIT II-5



Size is becoming more important, as a predictor of both survival and the level of support an applications software products or a turnkey systems vendor can deliver to its customers.

Although there are few barriers to entry in the software arena, it is questionable whether a small software company or VAR can remain viable without alliances. VARs and the smaller turnkey systems vendors are at a disadvantage in terms of geographic reach. They may have the best software for a specialized niche, but no way to expand their customer base; marketing alliances are a key requirement for growth.

Small companies can no longer expect to survive on their own in the long term. Such companies need a broader distribution reach, and the advertising, marketing and public relations that only a larger buyer can provide. Size alone provides far greater benefits to the business side of a software operation than it does to product idea generation.

The large-vendor influence is increasing in other ways as well.

- Starting with IBM, many large services vendors are making minority and majority investments to gain influence on technology, access to software products for remarketing, and market share.



- DEC's investment in Kienzle in Europe and EDS's investment in ASK Computer Systems are two examples of large vendors' seeking new channels and resources.
- As hardware profits decline, large hardware vendors are reorganizing in order to be more responsive to growing markets for software and services. DEC, for example, created its Software Products Group last year; and Sun has reorganized to create two software subsidiaries—one to develop more software and peripheral products and one to improve the UNIX operating system. IBM has also recently reorganized in order to grow its software and services business.
- Consolidation is also a factor. Mergers among the major accounting firms have reduced the number of players, but have given two of the firms (Ernst & Young and Deloitte Touche) added resources to follow the example of Andersen Consulting. A third—Price Waterhouse—is also experiencing significant growth in its information technology based business.

Large transaction processing services vendors continue to acquire smaller regional and local firms, but not at the rate of previous years.

Applications software vendors will continue to consolidate as more emphasis is placed on integration and interoperability. Applications software products firms are not only acquiring each other, but are also acquiring firms that have new technology bases—such as transaction processing data bases and client/server CASE tools—that are of paramount importance to the growing need to develop better applications software products based on new technologies.

The increasing use of business consulting linked to professional services has provided a means for the large accounting and consulting firms, as well as some large information services firms, to gain a greater share of the industry. INPUT expects this trend to continue over the next few years. The opportunity for the smaller, more specialized software product or services vendors is not disappearing, but it is changing character.

- Alliances with larger vendors will be essential, at least as secondary sales and support channels.
- Specialization—in terms of the technology used or the industry served or both—will become more important and common.

This bodes well for turnkey systems vendors and VARs whose added expertise in vertical niches is the basis of their success. It also bodes well for continued growth in industry-specific applications software products. However, increasing emphasis on specialization will have a negative



impact on turnkey vendors who compete as cross-industry sector vendors. And provision of tools for easy customization and integration will become increasingly important to success for vendors with cross-industry applications software products.

The continuing increase in the strength and impact of the larger vendors will have the following positive and negative impacts:

- Positive impacts include:
 - The larger vendors have the financial strength to minimize the risk of systems management services.
 - The larger vendors have financial resources available to invest in new technologies, often through investment in smaller and specialized firms.
 - A common set(s) of standards are more likely—IBM's SAA and DEC's NAS for example—which will cause conformity in the marketplace, more consolidation, eventual interoperability and portability.
- Negative impacts include:
 - Alliances may become a requirement for smaller technology firms to survive and prosper.
 - The dominance of the larger vendors will continue to grow.
 - Larger vendors tend to move more slowly, which will hamper development and acceptance of new technology. This slowness will provide opportunity to small vendors that seize technology initiative.

4. Outsourcing (Buy versus Make)

Since its inception, the information services industry (services and software products) has tended to outgrow the internal information services budget by continuously creating new products and services that permit the information systems function to outsource (buy versus make). This has always been an outsourcing industry. And though growth has slowed, a number of factors will permit continued growth that exceeds growth in the economy, the computer hardware sector, and the internal information systems budget.

Key trends in outsourcing are listed in Exhibit II-6.



EXHIBIT II-6

**Outsourcing:
Buy versus Make—Key Trends**

- Systems management
- Solutions buying
- Applications maintenance
- Applications management

a. Systems Management

Outsourcing the management of information systems or at least significant elements of information systems continued to gain momentum during 1990. Helped more than hindered by the recessionary economy, the inclination of the general management of large organizations to consider outsourcing increased.

The ability to transfer much of the financial risk and, perhaps more importantly, the technological risk of a project or operations to a specialist has numerous attractions for general management.

- The attraction that will become more and more important will be the ability to disconnect the information technology part of the solution from the business decision. General management is concerned with business results and does not want to debate the pros and cons of a technology. The appeal of the vendor's offer to take on risk either in a project (systems integration) or in operations (system operations) can only grow during the 1990s.
- The nature of most outsourcing activities within larger organizations often makes them favor the large vendors, adding impetus to the trend described above. If there is major risk involved, the buyer will bet on the company most able to accept risk and take responsibility.
- Perhaps the most important attraction is the ability of buyers to gain access to a broad information technology on an arm's-length business basis in a single decision.
- The systems integration vendor can provide all the needed expertise in a new technology at the beginning of a project. There is no internal training lag time while the information systems staff gains the knowledge and experience required.



- The systems operations vendor can provide a full utility-based service at a predictable cost over a number of years. This should make for fewer surprises from the overall information systems program.

b. Solutions Buying

Buying applications software is a well-established practice in the U.S. market where the use of packaged software is commonplace. However, the current change in the way U.S. organizations are managed and the availability of low-cost, high-performance client/server computing is bringing new impetus to the application solutions market.

- The fundamental decentralization of U.S. business management with the corresponding reduction of corporate staffs is creating a major requirement for business unit (distributed) application systems. Furthermore, the buyer is not an information systems professional and is willing to outsource (buy) with some customization.
- Just when the smaller business unit needs independent application solutions, there is a hardware revolution to support the need. Client/server technology provides affordable, high-powered computing.

The ability to find a VAR that can provide a package plus customized systems on client/server-based software is bringing the solution value of systems integration to the decentralized business unit.

c. Applications Maintenance and Applications Management

In line with the shift to outsourcing systems management to systems integrators and systems operations firms, the buyer is also seeking to gain more-defined relationships with more-traditional professional services vendors. Instead of contracting for temporary personnel, the buyer is beginning to contract for services like applications maintenance and applications management.

- Applications maintenance is contracted, 24-hour support of existing applications systems. The vendor provides a set level of services and interacts directly with the end user.
- Applications management is contracted management of development and maintenance of a set of applications. The vendor provides the software and all of the expertise and staff to assure that the application is successfully used over an extended period. Applications software products firms can become applications management vendors for their clients or let some other vendor do it.



The trend toward outsourcing is creating new demand for the provision of additional services by applications software firms and turnkey systems vendors. Customers are beginning to want to pay vendors to maintain their software rather than hire their own people to do it. Increasing need for customization and integration is also creating new demand for outsourced services.

5. Shifting Technology Foundation

Significant new technologies became available in the late 1980s and are gaining momentum in the 1990s. An underlying characteristic of much of this new technology is a shift in the technological foundation. Many elements of technology are shifting to new foundations.

Exhibit II-7 lists the key elements of this shift in underlying technology. Each element is causing organizations to stop and rethink key aspects of their information systems infrastructure strategy. Rethinking can slow the adoption in the short term, and create new vendor opportunities over the longer term.

EXHIBIT II-7

New Technology Foundations

- International standards
- Graphical user interface
- Client/server
- Networking and integration
- Distributed data
- Imaging
- Engineered/re-engineered software

All of these new technologies and foundations cause confusion in the industry and with the buyer. Confusion slows buyers' and vendors' decision making. Strategies need to be revised and investment plans shifted, and education is required.



- Standards are driving every major computer manufacturer and software products developer to revise strategies and change product development plans. New products are delayed and then require longer initial sales introductions.
- The user interface of the personal computer in its graphical pull-down menu and windowing form will be the only interface acceptable to users from now on. The text-based interfaces of the 1970s and 1980s will no longer be tolerated. Every major software product developer is re-engineering the user interfaces to its products. The widespread availability of easy-to-use graphical user interfaces will promote the use of application solutions by the general user base and will allow for use of more application solutions—both industry-specific and cross industry—per user.
- Downsizing, the common term for moving an application to a client/server-based installation, will be the greatest phenomenon of the early 1990s. Whether or not the installation is actually downsized, it will be moved to a new processing location and take on new characteristics. Major re-engineering of internal systems by the information systems function and a shift to buying server-based application products is under way. All of the impacts are not known. One, software products pricing based on the size of the platform, will have to change. Certainly some confusion exists and is impacting buying decisions.
- The growing use of PCs, workstations, and LANs has mandated a move to integrate the information networks of large and small organizations. Today's networking products permit the distributed applications that have been discussed for years but were never possible.
- The way data is stored and turned into information has been fairly constant since the creation of the first hierarchical DBMS in the early 1970s. Since then the challenge was to build data bases, not to consider building them with new types of components. The shift started with commercial use of relational DBMSs, but it is the distributed DBMS, and perhaps more importantly image processing, that will cause major re-engineering of the data base architectures of larger organizations. Major new investment is required and of necessity will come over time.

PCs, workstations, LANs, DBMSs, and client/server technology have a potentially negative impact on transaction processing services vendors. Though such technologies may slow the growth of "conventional" transaction processing services, vendors that can adapt to them will gain a market advantage. The challenges faced may be similar to those that occurred when timesharing services matured and then declined as companies provided internal capabilities and the age of the personal computer began. Looking back at that period may help processing services vendors find opportunities in the age of client/server technology.



Both cross-industry and industry-specific applications software vendors are scrambling to develop RDBMS-based products to compete in the 1990s marketplace. Oracle launched this trend with its cross-industry financial applications software products. Vendors are writing products using general SQL tools and are teaming with RDBMS companies such as Ingres, Sybase, Gupta and Oracle to make their application solutions available across a range of RDBMSs and hardware platforms.

Applications software products vendors as well as hardware vendors will look to third parties, including turnkey systems vendors and VARs, as a way to distribute their new technology-based solutions. VARs and turnkey vendors will increasingly need to develop technological expertise as well as integration expertise in order to keep pace.

- The age of truly engineered and re-engineered software through CASE technology is dawning. In five years the approach to maintenance will have finally changed and there will have been major advances in programmer productivity.

The positive and negative impacts of the shift in technological foundation are listed below. Certainly over the five-year period of this forecast the positives greatly offset the negatives.

- Positive impacts from this shifting technology foundation include:
 - New types of solutions will become available.
 - The role of the end user in information systems can continue to expand.
 - Opportunities for new as well as existing vendors are created.
 - Application systems can be increasingly molded to the character of the organizations they support.
- Negative impacts are:
 - Any shift causes confusion and hesitation in the near term. The magnitude of the current technology shift could cause confusion and slow investment through the middle of the decade.
 - The size of the task to shift to client/server technology in organizations with large centralized systems causes conflicting priorities between re-engineering and meeting new requirements.



- The technology shift now in process is creating a significant additional training and education requirement.
- Growth is slowed while the new technology is understood and learned.

6. The Changing Buyer

The decision maker for the purchase of information services remained relatively constant until the late 1980s. The information systems executive and key staff (systems development and data center operations managers) decided when to go outside and who to contract with.

This leadership has changed significantly in the past few years and promises to change even further. As integration becomes increasingly important the decision to purchase any given applications software product—be it cross-industry or industry-specific—will involve multiple departments/divisions and multiple levels of an organization. As the information services vendor moves to provide a full long-term service or a full solution, the general manager is becoming the buyer. The impacts are significant.

- Technology becomes less important and the business or operational impact becomes more important.
- The impact of the information systems function becomes more consultative and less direct.
- The ability to try new ideas and approaches is increased.
- The time to completion is controlled by the organization's ability to afford, not the ability of information systems to develop.

D

Summary

The year 1991 is exhibiting significant changes from the 1980s. The changes suggest more modest, but continued strong and stable growth for the information services industry.

- An economy that does not shift quickly helps management make longer term decisions, albeit at a slower pace.
- A market of \$100 billion that is strongly impacted by the direction of the larger vendors should be expected to grow somewhat more slowly.
- The increasing tendency of larger organizations to turn to vendors for services that include real and significant elements of systems management and have a solutions orientation will lead to larger, longer term decisions—decisions that can take longer but have a lasting impact.



- The shift in the underlying technology foundation is for the better—more valuable and productive application solutions will result. But shifts bring re-engineering, reinvestment, and retraining—and require time and money.
- The role of the general manager concerning the deployment of information technology continues to increase. In many instances the general manager is more influential than the information systems manager, particularly regarding major decisions. Over time the general manager's influence will have positive impacts on the size and growth of the information services industry—as long as the vendors provide satisfaction.







Information Systems Environment







Information Systems Environment

In order to better understand what was most on the minds of IS managers regarding applications software products, INPUT surveyed top computer executives in medium- to large-sized corporations. INPUT also conducted a series of telephone interviews with the respondents to obtain additional information about and clarification of some of the points in the written questionnaire.

The purpose of the questionnaire was to probe managers about specific areas of applications software products such as their purchase plans, customization and product and vendor preferences and their key technology goals. INPUT was therefore able to test its previous conclusions about the marketplace as well as to obtain additional insights.

Individuals completing the questionnaire were predominantly MIS directors, systems development and programming managers.

The views of 56 IS managers are tabulated and the results analyzed. Although large development budgets persist, spending on packaged applications software products is healthy. Cross-industry products and products with little or no need for customization are generally preferred.

A

Demographics

Exhibits III-1 and III-2 show the distribution by vertical sector and revenues of the corporations that participated in the survey.



EXHIBIT III-1

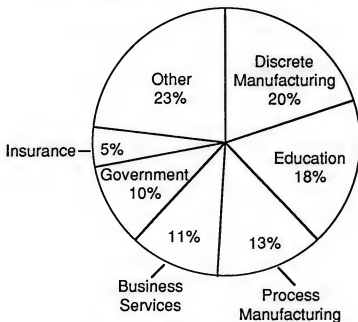
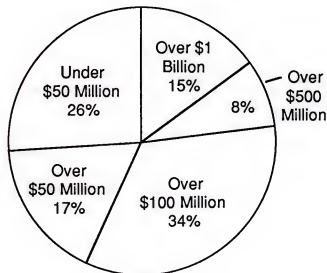
**Demographics of User Organizations
Industry Segmentation**

EXHIBIT III-2

**Demographics of User Organizations
Revenue Size**



- The mail survey included all industry segments. Industries with the greatest representation are: discrete manufacturing (20%), education (18%), and process manufacturing (13%). The largest sectors within the "Other" category—each consisting of about 5% of the survey sample—are transportation, retail distribution and banking and finance.
- 15% of respondents have revenues over \$1 billion; about 35% of the companies have revenues between \$100 million and \$500 million; and 26% are under \$50 million in revenues.

Although the sample represents a cross-section of vertical markets and company sizes, the survey results have been analyzed in total rather than by industry sectors or size groupings.

B

Applications Software Products Purchase Plans

Respondents were asked questions about overall budget size, cross-industry and industry-specific product spending, spending by platform size, and spending for new versus existing applications software products.

1. Budget Size

Exhibit III-3 shows the distribution of applications software products budgets.

EXHIBIT III-3

Applications Software Products Budget

Budget Size	Percent of Respondents
Over \$1 million	2
Over \$500,000	6
Over \$250,000	13
Over \$100,000	27
Under \$100,000	52

- On average, the applications software products budget for 1991 is \$291,000.
- The average budget will grow to \$360,000 in 1992, a healthy 24% increase.



- The expenditure growth from 1991 to 1992 is higher than INPUT expected. A weak economy does not appear to have a negative impact on applications software products expenditures for this survey sample. In fact, when questioned further, respondents indicated that the selective installation of new applications software products—including downsized solutions—is viewed as a means of minimizing corporate costs and improving productivity. Corporate restructuring through downsizing or acquisition also creates a need for new application solutions. Thus an economic slowdown enhances rather than inhibits applications software expenditures.
- Respondents were asked to indicate whether or not these amounts encompass all applications software packages purchased or licensed for their entire organization. If not, they were asked what percentage of total purchases they estimated the amounts to be. Respondents indicated that the figures given were about 70% - 80% of the total for their entire organization. The actual average budget for 1991 could therefore conceivably be in the \$350,000-\$400,000 range, growing to \$430,000 to \$500,000 in 1992.

2. Cross-Industry versus Industry-Specific

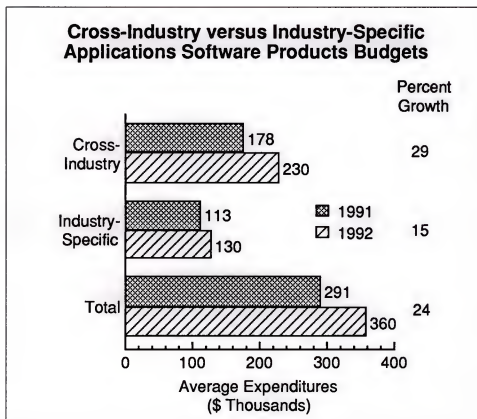
Respondents were asked to estimate the percent of budget spent on cross-industry and industry-specific applications software products. To assure accurate responses, INPUT's definitions of cross-industry and industry-specific applications software products were included in the questionnaire as follows:

- Cross-Industry—Software products that perform a specific function applicable to a wide range of industry sectors. Examples are accounting, financial modeling, human resources, payroll, word processing, spreadsheets.
- Industry-Specific—Software products that perform functions related to solving needs unique to a specific vertical industry and sold to that industry only. Examples are portfolio management, MRPII, and medical record keeping.
- Data base management systems (DBMSs), graphical user interfaces such as Windows, and applications development tools, including CASE tools, are not considered applications software. Also excluded are processing services and network services.

Exhibit III-4 shows the respondents' average 1991 and 1992 budgets, broken out by these two categories.



EXHIBIT III-4



- Expenditures on cross-industry software do not only represent a higher percent of the budget; growth for 1992 is twice as high as for industry-specific software.
- Respondents with small or no industry-specific purchases had these comments:
 - They do not want to be locked into a specific solution they will have for years and are particularly reluctant to purchase industry-specific solutions, due to all the change under way in their industry as well as in the computer hardware and software industries.
 - Their needs are too specialized for industry-specific software and therefore they favor in-house development.
 - They want control over their software and want to be sure it can interoperate with what is already installed.
 - The applications software selection for their type of hardware is meager.
 - Too much customization would be required, which makes the software hard to maintain.

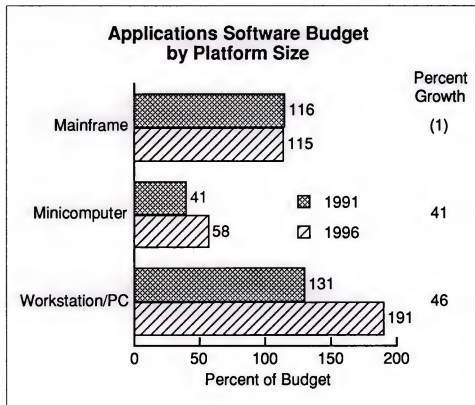


3. Expenditures by Platform Size

Respondents were asked to estimate the revenue percent split by platform size.

- As shown in Exhibit III-5, expenditure for applications software products that run on workstations and personal computers represents the largest proportion (45%) and is growing the fastest (46%).

EXHIBIT III-5



- Expenditure on minicomputer-based products represents the smallest proportion of the budget (14%), but will be up 41% in 1992.
- Expenditures on mainframe-based applications software will be about the same in 1992 as in 1991.

Respondents were then asked if the budget split by platform size is different for cross-industry and industry-specific applications software. Thirty-three percent indicated that the split was different, as shown in Exhibit III-6.



EXHIBIT III-6

**1991 Applications Software
Budget by Cross-Industry/
Industry-Specific and Platform Size
(33% of Respondents)**

Platform	Percent of Respondents	
	Cross-Industry	Industry-Specific
Mainframe	45	46
Minicomputer	14	29
Workstation/PC	41	25
Total	100	100

- For 33% of respondents, more is spent on cross-industry software for workstations and personal computers; and more is spent on industry-specific software for minicomputers.

Adding the responses of the 33% that said more is spent on cross-industry software for workstations/PCs (Exhibit III-6) to the 67% that did not notice any distinctions by platform size (Exhibit III-5) reveals the following (Exhibit III-7):

EXHIBIT III-7

**1991 Applications Software
Budget by Cross-Industry/
Industry-Specific and Platform Size
(100% of Respondents)**

Platform	Percent of Respondents	
	Cross-Industry	Industry-Specific
Mainframe	42	36
Minicomputer	14	21
Workstation/PC	44	43
Total	100	100

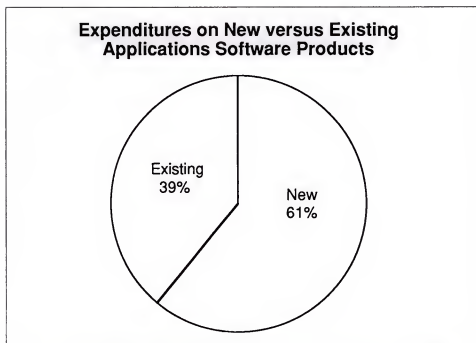


- For the survey sample as a whole, the only real distinction is that more industry-specific software is purchased for minicomputers; expenditures are 50% higher for minicomputer-based industry-specific software than for cross-industry software.
- For respondents in total, the split of cross-industry and industry-specific software running on workstations and personal computers is essentially the same.

4. New versus Existing

Respondents were asked what percent was spent on new applications software packages versus maintenance and annual license fees for existing software. On average, 61% of their total 1991 budgets are for purchase of new applications software products and the remainder is for maintenance and annual license fees (Exhibit III-8). The percentage split is about the same for 1992.

EXHIBIT III-8



- The percent spent on new purchases is noticeably higher than INPUT expected. Comparable INPUT data from other research indicates that this percentage is more in the range of 25%-30% spent on new applications software products and 70%-75% spent on maintenance/licensing fees.
- Plausible reasons for the seemingly high expenditure on new packages could be the continued shift towards PC spending and the significant number of small companies in the survey sample. Smaller companies are more likely to buy lower-cost software where maintenance costs are less significant.

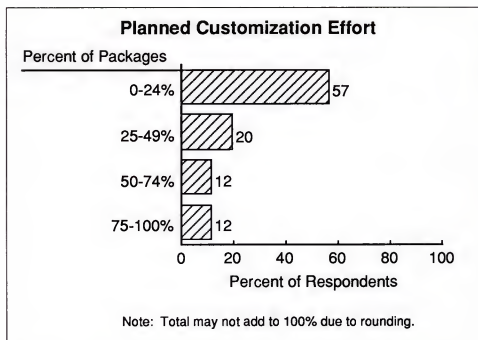


C

Planned
Customization Effort

The question asked was, "Of all new applications software product purchases, what percentage of packages will you modify or customize?" The results are shown in Exhibit III-9.

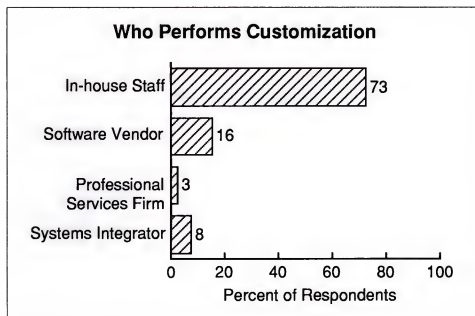
EXHIBIT III-9



- The majority of respondents will customize 25% or less of their purchases; only 12% of respondents will customize 75% or more of their applications software products. The average amount of customization is somewhere between 20%-30%.
- Discussions with vendors reveal that vendors are increasing the customizability of their products and expanding their customization toolsets. Nonetheless, given responses to several of the other questions asked in this survey, users do not want to have to customize and they favor products that don't need it. In fact, as discussed in Section E below, easily customizable software is only a moderately important vendor selection criterion.
- As shown in Exhibit III-10, of the customization that is performed, most is done in-house; only 25% is done by outside service vendors, including applications software firms. INPUT expects the amount performed by external service providers to increase.



EXHIBIT III-10

**D****Total Applications Development Plans**

- The average applications development budget for 1991 is \$1.3 million, over four times greater than what is spent on packaged solutions. Therefore, even though purchase is on the increase, a great deal of applications development is still taking place.
- Overall, 52% of the budget is for enhancement/maintenance of existing systems and 48% is for development of new systems.
 - Responses ranged from a process manufacturer that purchases all of its applications software and a bank that purchases most of its software to a specialized business services firm that develops essentially all its company-specific applications software internally. The percent split may be dependent on vertical market and degree of need for specificity.
 - INPUT research in late 1990 indicated that 67% of budgets were for enhancement/maintenance and 33% for new development. Thus, the actual split may be about 60%/40%.
- Of the total applications development budget, an average of 63% is spent on internal development and 37% is spent on contracted professional services. Three respondents indicated that more than 70% of the total is spent on contracted services.

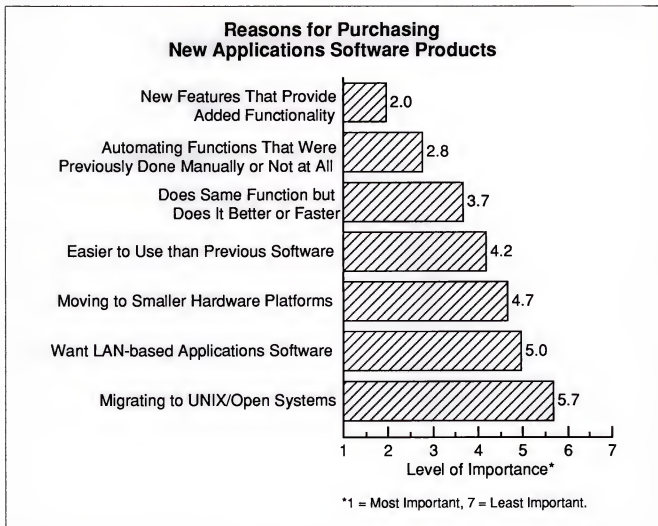


E

Product and Vendor Preferences

Respondents were asked to rank in order of significance seven specific reasons for purchasing new applications software products—1 being the most significant reason and 7 the least significant reason. Thus, a ranking of 3.5 indicates average significance within this set of criteria. The results are presented in Exhibit III-11.

EXHIBIT III-11



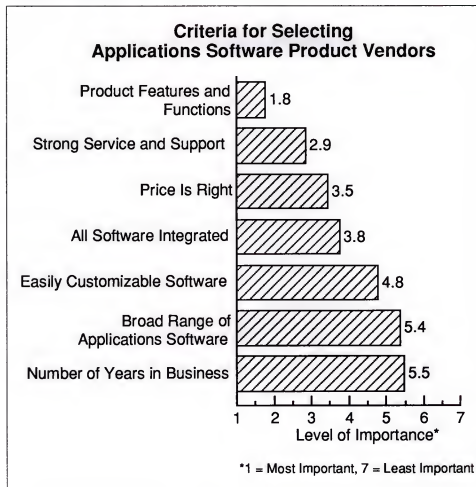
- No single criterion ranked a 1, indicating lack of consensus about the single most important product selection criterion.
- New features are the most significant reason to purchase new applications software products and were rated 2.0 on average. For respondents, new features mean:
 - New functions not previously available and that they do not have in-house expertise to develop



- Functions that decrease number of transactions necessary
 - Portable across hardware platforms
 - Expandability—meeting needs as company grows
 - Interfaces to other application solutions
- Respondents ranked automating functions previously done manually as second in importance.
 - The move towards smaller hardware platforms and the desire for LAN-based applications software ranked fifth and sixth of seven criteria. This is consistent with the relatively few mentions of downsizing and networking as key technology goals—23% and 27% of the respondents respectively (see Section F below).
 - UNIX/open systems ranks last as a reason to purchase new applications software products.

Respondents were also asked to rank criteria in selecting an applications software products vendor, where 1 is the most significant/important reason and 7 is the least significant/important reason. The results are shown in Exhibit III-12.

EXHIBIT III-12





- The most important reason to select an applications software products vendor is the product features and functions, which is consistent with findings about reasons for purchasing a new product.
- Users are willing to pay more for not only features/functions but also strong service and support capabilities.
- It is interesting to note that integrated software is about in the middle (3.8) in terms of importance in selecting a vendor. This finding implies that for a product with new/better features and/or a vendor with strong service and support, users are willing to tackle integration themselves or hire someone to do it.
- For this survey sample, easily customizable software ranked only 4.8 in significance. This ranking implies that users do not customize purchased software to a large degree and it is consistent with findings that, on average, users customize only between 20% and 30% of the applications software products they purchase.
- Given discussions with vendors, INPUT expected this ranking to be higher. Vendors are adding customization capabilities in hopes of expanding their market reach.
- A broad range of applications software from a single vendor is of less than average importance (5.4) as a vendor selection criterion. Clearly, users want to be able to choose from a variety of vendors; one-stop shopping for applications software is not critical.
- The number of years in business is ranked last as a vendor selection criterion.

These findings strongly suggest that room exists in the marketplace for new features/functions as well as for new vendors.

F

Key Technology Goals

Respondents were asked to list their three key technology goals over the next several years as they relate to applications software products. Similar goals are grouped into ten categories. Exhibit III-13 lists these categories and indicates the number of goals mentioned within each category.

- No category of goals was mentioned by more than 27% of respondents, indicating lack of consensus about technology directions over the next several years.
- Lower costs and improvement of overall productivity in a general sense is tied for first place as a key goal; it is assumed that this is the goal of all respondents, although not all of them mentioned it as a "technology goal."



EXHIBIT III-13

Key Technology Goals

Category of Goals	Number of Responses
Lower Costs, Improve Overall Productivity	15
Install New/Updated Applications Software	15
LANs/Networking	15
Integration	13
Downsize Hardware/Software	13
Data Accessibility	12
Quick, Easy Applications Development	11
Ease of Use	9
Open Systems/UNIX	9
Other	4

- The two specific technology goals that came out on top are new or updated applications software and LANs/networking. Presumably they are viewed as key ways to lower costs and improve productivity. Each of these categories of goals was mentioned by 27% of the survey sample.
- Although these findings cannot be used to forecast types of products that will be purchased, the following applications software product purchases/installations were mentioned: personnel/payroll/benefits, inventory management, financial systems, new banking applications, purchase order processing, office automation, warehouse management, process measurement, purchase request tracking, and point-of-sale systems.
- The technology goals of LANs/networking, integration, downsizing and data accessibility are interrelated. All enable users to access and share data and/or applications software products and resources more easily. About 45% of all mentions encompassed these four areas.



- It is interesting to note that these goals in fact precede faster/easier applications development. Quick/easy applications development is still among the top ten technology goals, but it is in the bottom third of the top ten. According to 1990 INPUT research, some of the approaches being used to control applications development resource consumption are: limiting resource allocation, purchasing packaged software products, re-engineering applications, and taking on maintenance-only functions.
- Three respondents mentioned EDI as a key technology goal.
- A variety of integration goals were mentioned, including:
 - Implement enterprise model
 - Integrate data bases
 - Operate over multiple platforms
 - Integrate applications
 - Link currently incompatible application systems
- Downsizing goals—mentioned by 23% of respondents—are evenly split between offloading the mainframe to minicomputers, workstations, PCs and PC-LAN configurations, and implementing client/server technology. Offloading the minicomputer was not mentioned.
- Data accessibility goals—mentioned by 23% of respondents—include more timely access to data, implementing EISs (executive information systems), improved ease of uploading to or downloading from the mainframe, easy-to-use reporting and query facilities, and implementing a DBMS.
- Faster/easier applications development was mentioned as a key technology goal by 16% of respondents. Examples of the kinds of goals related to development are:
 - Implement CASE (several mentions)
 - Reduce need for customization
 - Develop efficient development procedure
 - Obtain object-oriented DBMS
- Open systems/UNIX was mentioned as a technology goal by 16% of respondents, the same percentage as for improved applications development.

G

Survey Conclusions

Exhibit III-14 outlines the survey conclusions. A discussion of these conclusions follows.



EXHIBIT III-14

**Information Systems Environment
Applications Software Conclusions**

- 24% budget increase planned for 1992 applications software products expenditures
- Mainframe-based spending declining; workstation/PC-based spending increasing
- More cross-industry spending
- Low level of interest in customization
- Large applications development efforts persist
- UNIX a low priority
- More functionality and features desired
- A variety of vendors preferred
- A variety of technology goals and approaches

On average, planned expenditures for next year will be 24% higher than for 1991. This is a healthy increase, more than INPUT expected. INPUT's five-year forecast—presented in Chapter VI, Information Services Market Forecast—considers the survey results as well as other factors and research data.

A weak economy does not appear to be dampening expenditure plans; on the contrary, it may promote expenditures as users look to applications software products as a way to reduce costs and improve productivity within their corporations. Purchases of applications software products are being closely scrutinized; products that obviously improve productivity will be purchased while sales of other “nice to have but not necessary” products will suffer.

Spending on applications software products for workstations and personal computers is growing the fastest; spending on mainframe-based products shows a decline. This pattern is the opposite of that shown in research on systems software products: for systems software products,



mainframe-based expenditures are still the highest. This suggests that the mainframe as data repository for offloaded or downsized applications is viable.

The survey sample spends more on cross-industry applications software products—61% of the total budget and growing—than on industry-specific products. Several respondents expressed the concern that industry-specific software isn't specific enough for their needs and they don't want to have to customize the product. A reason for lack of interest in customizing is that customized products are harder to maintain. Another comment in favor of internal development as opposed to purchasing industry-specific software is the desire to maintain control over corporation-specific solutions.

Given some of these concerns, large applications development efforts continue in spite of vendors' efforts to make their products easier to customize. A dilemma for vendors is deciding what it will take to get users to purchase rather than develop; if they make their products more specific, the potential market size is limited. Vendors are responding to this challenge by not only adding customization and flexibility to their products but by providing services in support of users' development efforts. It would appear that the latter will provide the most immediate returns.

On the other hand, survey respondents expressed keen interest in products with new or better features and functions as well as products that can automate previously manual tasks. They want more specific products—that ideally require little or no customization—yet the profit structure of the industry may not provide much room for vendors to comply.

Integration of a vendor's applications software products and number of years in business are not high on the priority list of vendor selection criteria. This implies that being an established vendor is not necessarily a strong advantage in today's marketplace and that room exists for new market entrants. This may also imply added interest in turnkey vendors and VARs who can add specific functionality, and serve a smaller, specialized market.

Respondents indicated a wide variety of technology goals and approaches as they begin to shift along with shifting technology foundations. Foremost in their minds is to lower costs and improve corporate productivity. As expected, UNIX is a low priority; other frameworks such as SAA and NAS were not mentioned as (short-term) technology goals.



H**Turnkey Systems**

Although the turnkey systems delivery mode was not included in this survey, it is included in this report as an application solution.

Generally speaking, turnkey systems—encompassing a total solution of software, hardware and service—are purchased for the fundamental purpose of running a business. In other words, the applications are, foremost, industry-specific production-level applications. For example, a law office will purchase a complete industry-specific accounting package that includes professional services billing, client disbursements, and client cost-tracking systems, which will be the mainstay of its business. A cross-industry human resources package will be a secondary consideration, the purchase decision typically being made after the turnkey solution has already been procured.

Thus—in contrast to applications software package purchasing patterns indicated by the survey results—the software emphasis for turnkey systems is industry-specific rather than cross-industry. Another obvious distinction is that far fewer turnkey purchases are mainframe-based.

I**Processing Services**

According to separate market research findings, processing services will continue to exhibit some growth during the next five years, but growth will be selective, favoring certain markets and types of vendors. Processing services exhibiting the highest growth will be those that can be performed more economically by an outside services firms or that organizations would like to offload because the procedures, updates, operational tasks and problem resolution are burdensome.

- The most common cross-industry processing service—payroll—may not cost less to run at a vendor's site, but clients feel that it is advantageous to have updates to tax tables, handling of checks, withholding and other payroll-related functions handled by an outside services firm.
- The quality of work is also a vital consideration for users. Providing the right application products and offering a competitive price will not offset late work, errors, or an inability to be responsive to inquiries and problems.

End users are having more impact on the selection and use of information services, and they question why processing services vendors are not always responsive to opportunities such as:

- Seeking additional opportunities for processing work with existing customers.



- Adding new applications or functions to their computing capabilities that would be useful to end users with workstation/PC resources, such as large-scale financial modeling or expert systems.
- Helping to move work in-house or to outsource in-house work.

Since there is more exploration of alternatives on the part of end users, processing services vendors must spend more time learning about and responding to the ideas of end users. According to respondents, the use of processing services will rise over the next several years but there will be more volatility in the market than previously experienced. Vendors will have to be more proactive in selling new accounts and holding on to existing ones.







Information Services Market







Information Services Market

This chapter presents user expenditure forecasts for human resources cross-industry application solutions by delivery mode. Assumptions driving the forecasts are provided. Information in this chapter draws on the trends, events and issues presented in Chapter II, the user environment discussed in Chapter III, and the competitive environment which is discussed in Chapter V.

Note that these forecasts do not include industry-specific application solutions. The markets for these types of information services are presented in "industry-specific" MAP reports rather than the cross-industry reports.

Section A, Overview, discusses the overall size and growth rate of user expenditures for human resources cross-industry application solutions. Section B, Delivery Mode Analysis, breaks out this same forecast into INPUT's delivery modes. The delivery modes that are applicable to cross-industry sectors are:

- Applications software products
- Transaction processing services
- Turnkey systems

The following five delivery modes are not included in this cross-industry report as they are not considered application solutions.

- Network services
- Systems software
- Systems integration
- Systems operations
- Professional services



In addition, utility processing services and other processing services are excluded. These seven areas are discussed in several of INPUT's delivery mode reports.

A

Overview

Human resources is an obvious functional area for automation as it involves a tremendous amount of variable records and reporting requirements. Though on the whole a majority of systems are cross-industry, examples of vertical niches are government and health care, with further differentiation between union and non-union.

Purchase from a third party is strongly favored over internal development due to the continuous need for updates; the maintenance requirements are simply too great. Thus the growth of this cross-industry sector, unlike most of the other cross-industry sectors, is not strongly threatened by either the trend toward specialization or the desire for internal development.

During the 1991-1996 timeframe, user expenditures on human resources application solutions will increase from \$2.4 billion to \$3.8 billion, a compound annual growth rate of 9% (Exhibit IV-1).

EXHIBIT IV-1

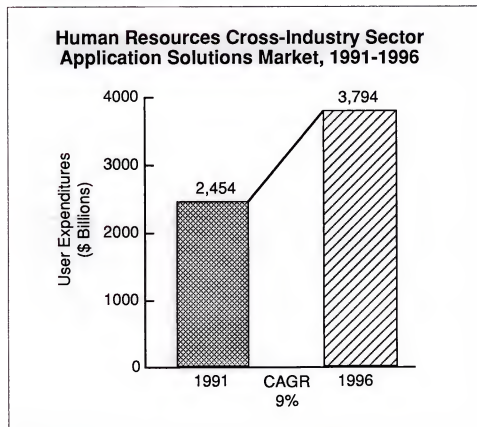




Exhibit IV-2 shows a number of business and technical driving forces that are impacting the demand for human resources cross-industry information services during the 1991-1996 timeframe.

EXHIBIT IV-2

Human Resources Information Services Driving Forces

- HR function becoming more strategic
- Government regulation, HR complexity increasing
- Recessionary impacts
- Need for distributed data and flexibility

The first two have been and continue to be underlying driving forces. The second two—recessionary impacts and the need for distributed data and flexibility—are more recent drivers. The last one in particular will have significant impact on user expenditures in this cross-industry sector during the next five years. Each one of these four forces is discussed briefly below.

- It is becoming increasingly apparent that attracting and retaining a highly skilled workforce, as well as containing “people costs”, are paramount to maintaining a corporate competitive edge. The general perception is that effective human resources and payroll systems help to realize these objectives. Thus corporate executives are taking more notice of the HR function and the IS systems that support it. This driving force has a positive influence on user expenditures.
- The constant increase in government regulation and in the complexity of the human resources and payroll functions continues to be a major driver of both HR and payroll application solutions. An area of concern for human resources is keeping up with the tremendous amount of new legislation.

Human resources must also handle all the changes effected by company consolidations, international expansion and downsizing. One phrase that aptly describes the human resources function is “keeping up with changes.” Constantly changing state and federal payroll regulations—FICA rates, minimum wage changes, FSLA requirements, 401(k) and IRA regulations to name a few—require continuous updates in human resources management systems and payroll application solutions.

- The impacts of a slowed economy—beginning in late 1990—will continue to have mixed influences on expenditures for this cross-industry sector in the short term. On one hand, a recession makes



“people data” even more critical to track, review and analyze. On the other hand, a weak economy could signal potential expenditure cuts in all but production-level information services. It could also lead to decreasing need for payroll processing services as the size of the work force levels off.

- Much of what was the exclusive domain of personnel is now the responsibility of line managers. Making data available to line managers has become an issue for human resources and IS departments and promotes the demand for downsized RDBMS-based applications software products as well as PC front-end solutions to payroll processing services.

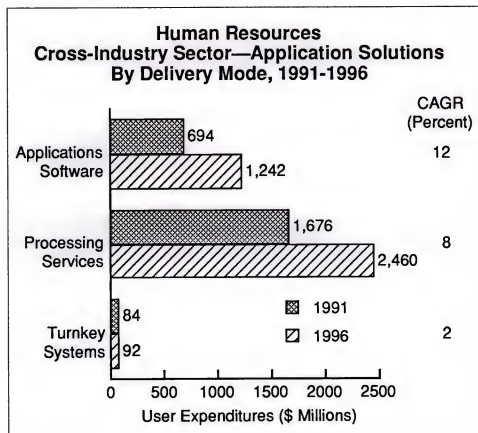
The need to upgrade to more flexible software which is able to more easily accommodate customer-specific tailoring of the software product, easy integration with other functional software is also cause for growth of user expenditures in this cross-industry sector.

B

Delivery Mode Analysis

As depicted in Exhibit IV-3, the largest delivery mode will continue to be transaction processing services.

EXHIBIT IV-3



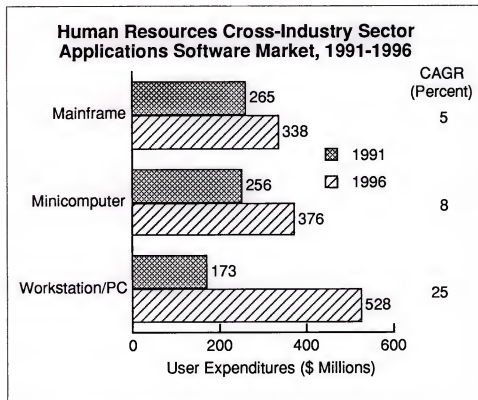


Its growth has been solid although not rising in recent years. Applications software products growth, on the whole, is only slightly stronger than processing services growth. Turnkey systems—a combination of hardware and software specifically for the human resources/payroll function—are essentially nonexistent in this cross-industry sector.

1. Applications Software Products

Exhibit IV-4 shows growth expected in cross-industry human resources applications software products by platform size.

EXHIBIT IV-4



Mainframe-based human resources, benefits and payroll applications software will experience a 5% compound annual growth rate—about the rate of inflation—through 1996, increasing from user expenditures of \$265 million in 1991 to \$338 million in 1996. Most of the expenditures on this platform category will be for maintenance/licensing fees of existing human resources applications software products. The reasons for this slow growth rate are users' moving of human resources applications from the mainframe to minicomputers and PCs, and users' waiting to implement client/server offerings.

Decentralization has a positive influence on growth of expenditures for minicomputer- and PC-based systems. A general trend toward more modularity, e.g., a smaller system for benefits, a separate one for payroll, and a separate—yet integratable—system for resource planning, is also a growth promoter for midrange and PC-based systems.



On the other hand, users will have to weigh the trade-offs between a minicomputer system versus a PC LAN system or a client/server system. As a portion of would-be minicomputer users opt for PC LANs and client/server solutions, growth of user expenditures for minicomputer-based HR solutions will be negatively impacted.

Workstation/PC-based systems are expected to grow the fastest, from \$173 million in user expenditures in 1991 to \$528 million in 1996, a 25% CAGR.

High growth will be especially apparent in the latter half of the forecast period as vendors introduce—and customers begin to accept—client/server solutions based on PCs and workstations. As described on Chapter V of this report, practically all of the leading human resources software products vendors are developing client/server versions of their products, the first of which will all be introduced within the next two years.

An important issue that needs to be addressed that will impact user expenditures forecasts for PC and workstation-based products will be the pricing schemes adopted for client/server solutions. One approach that appears to be gaining adherents is to price the new applications software products according to numbers of employees that will be processed through the system; this way, a small organization would be paying less for a client/server solution than an organization with more employees.

INPUT feels that at least in the short term, this pricing scheme as well as any other pricing scheme will not have a negative impact on the forecasts. Vendors will resist lowering prices; they will sell their client/server products on the basis of functionality/benefits—e.g., distributed data, multivendor, multiplatform—rather than with the lure of lower prices. The question remains whether and when the lure of lower prices will be necessary.

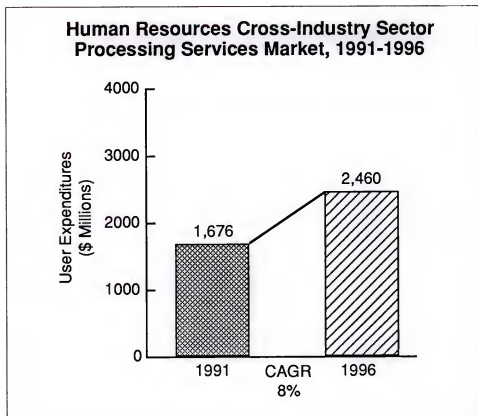
2. Processing Services

Exhibit IV-5 provides INPUT's 1991-1996 forecast for processing services within the human resources cross-industry sector. The bulk of processing services is for payroll. Additional related processing services are tax payment services, benefits services, and various human resources services. The addition of services related to payroll is a growth promoter for this delivery mode.

The demand for processing services is impacted by the ongoing natural ebb and flow of employees leaving and joining corporations. Other than creating a certain amount of instability from the vendor perspective, this natural flow has a negligible impact on the overall user expenditure forecast.



EXHIBIT IV-5



Other underlying driving forces for processing services are:

- The majority of small companies (50 employees or less) still use a manual system. These small companies represent a sizable potential market for payroll processing services. But the question that remains to be resolved is whether these companies will opt for PC-based solutions—as prices for personal computers and workstations continue their decline, as software products pricing also continues to decline, and as the systems become easier to use through graphical user interfaces and RDBMSs—or processing services. In favor of the processing services option is the aforementioned complexity factor and the continual need for product upgrades reflecting changing regulatory requirements.
- Unlike HRMS, the demand for payroll processing services in larger corporations has not—at least yet—been negatively impacted by the trend toward offloading applications from the mainframe and using smaller hardware platforms rather than processing services. Distributed processing and client/server payroll packages are in their infancy and customers are adopting a “wait-and-see” attitude, and so are staying on the processing services bandwagon. Also, payroll data is laden with security concerns, which implies centralized control and limited access.



In order to dissuade customers from choosing the option of in-house solutions, processing services vendors are providing PC front ends to their services and additional query tools and reporting capabilities, thereby giving users more of a sense of control and immediate data access. Graphical user interfaces and SQL tools are therefore significant new technologies not only for applications software products vendors, but also for processing services vendors.

- Companies are increasingly using third parties as a way to control costs. Payroll processing vendors are capitalizing on the term "outsourcing" and are positioning themselves appropriately. Companies will continue to want to offload as much as possible from the mainframe, including payroll.
- In light of the increasing need for data integration at the customer site, a growth inhibitor is the complexity of integrating payroll processing services with third-party HRMS, benefits and accounting software. To the extent that processing services vendors provide the HRMS and benefits software themselves and ways to integrate the two, growth for their services will be enhanced.

3. Turnkey Systems

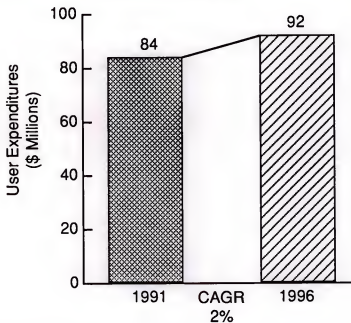
Turnkey systems in the human resources cross-industry sector is a small slice of overall user expenditures and will remain so. Human resources solutions are typically installed on existing hardware or hardware that has already been decided upon. If human resources and payroll functions are part of a turnkey system, it is usually a system that is industry-specific, such as for health care or for the legal profession.

A growth inhibitor is the increasing visibility given to integration and the productivity/cost improvements inherent in closer ties between human resources/payroll and financial/accounting functions. Thus turnkey systems that include other applications and are directed to vertical sectors will be the norm rather than turnkey systems dedicated to human resources.

User expenditures are small to begin with and INPUT forecasts a slow 2% CAGR for this delivery mode. Exhibit IV-6 shows growth expected in cross-industry human resources turnkey systems.



EXHIBIT IV-6

**Human Resources Cross-Industry Sector
Turnkey Systems Market, 1991-1996**







Competitive Environment







Competitive Environment

This section discusses the competitive environment for information services within the human resources cross-industry sector. Key trends and vendor reactions to these trends are discussed. Leading vendors are identified and representative vendors are profiled.

A

Vendor Characteristics and Trends

Key vendor and product trends under way in the human resources cross-industry sector are outlined in Exhibit V-1. These are the trends that were apparent last year but have truly begun to crystallize this year.

EXHIBIT V-1

Human Resources Cross-Industry Sector Key Vendor/Product Trends

- Downsizing, including client/server implementations
- More customization
- More closely integrated products and services
- More delivery mode offerings

Noticeably absent from the list of key trends in Exhibit V-1 is UNIX. Although several companies, including Oracle and Ross Systems, have UNIX HR and payroll products, client/server implementations to the exclusion of UNIX—at least for now—is the priority for most leading vendors. For example:

- Integral is watching UNIX carefully but not doing anything yet.
- Genesys is not planning any moves into UNIX at this time.



- D&B Software is investigating UNIX, but client/server architecture using OS/2 as the platform will be implemented first.

Compliance with frameworks such as SAA and NAS is still an underlying trend as are new versions of DB2-based products. But these, along with UNIX, are not at the forefront of vendor activity.

1. Downsizing, Including Client/Server Implementations

Human resources is an exemplary application for PC front ends and client/server products as divisional and departmental managers need access to their employees' files for review, processing and update. Also, employees can be considered users of human resource information systems, for they are the source of much of the basic data managed by the system.

- The use of microcomputers as access points to the data base for uploading or downloading is still being exploited as a product/service extension.
- Personal computers have changed the way payroll processing services are delivered to the customer. A trend continues for payroll processing firms to accept and transmit data where the client wants it in order to remain a viable alternative to in-house solutions.
 - Control Data Business Management Services Division's Orchestrator software is an example of how a payroll processing firm has responded to the need for data availability. Orchestrator enables users to enter payroll data via their microcomputers and transmit it to CDC-BMS for processing. It also enables customers to retrieve report and data files for ad hoc reporting or integration with Lotus 1-2-3, dBase and Wordstar.
- Various versions of client/server software products are beginning to emerge. Notable examples are PeopleSoft's product line and the products that are under development by Dun & Bradstreet Software and Genesys.

Although there are varying versions of client/server systems, common components are outlined in Exhibit V-2 below:

Although almost all major applications software vendors are developing client/server HRMS products, client/server payroll packages are for the most part not on the drawing board due to the bottleneck created in transferring large quantities of data back and forth, and the heavy printing requirements.



EXHIBIT V-2

Client/Server Components

- LANs
 - SQL data bases
 - Multiple sized hardware platforms as servers
- Personal computers as clients
 - Graphical user interface (Windows or Presentation Manager)

Whereas accounting software products vendors are continuing to announce new DB2 versions, SQL data bases tied to graphical user interfaces either through Windows or Presentation Manager are more significant in the human resources cross-industry sector, because these HR products are more likely to be used by professionals who have little computer expertise. For example, Integral is developing software that will be transportable across several SQL data bases, including PeopleServer (Microsoft/Sybase), IBM Data Manager, and Gupta and Oracle RDBMS products.

- Increasing emphasis is being placed on having a single consistent architecture across platforms. A sales strategy for the new client/server products is to position them as multiplatform and multivendor. Oracle's products, for example, run on 27 different platforms. Multivendor/multiplatform is a solid vendor approach—increasing in importance over the long term. As the concept of enterprise-wide solutions gains momentum, corporations with multiple divisions will want the same application running in a variety of locations and on a disparate collection of hardware vendors/platforms.
- The fact that the same (client/server) version can run on anything from a workstation to a LAN-based configuration, to a mainframe-based/DB2 configuration is a selling point to customers moving to a client/server product; it makes the migration easier. The user sees the same screens, is subject to the same edits, observes the same security, views the same reports, etc., as before.

2. More Customization

A discernable shift is under way toward more tailoring of applications software products by both the software vendor and the customer. The ease with which a product can be tailored and the increased availability of tools with which to do this are compelling selling points. Vendors want



to eliminate as much as possible the need for hard coded modifications and are offering easier-to-use report writers, front ends for such purposes. As an example, PeopleSoft's PeopleTools is a set of proprietary customization facilities.

More opportunity for customization is also being provided by payroll processing services firms that are adding reporting capabilities. Processing services vendors are expected to be flexible in the presentation of an application solution and be willing to customize it to suit the client's needs.

3. More Closely Integrated Products and Services

Historically, payroll and human resources have been two separate organizations within a company. The trend to merge these two functions to varying degrees and for the two functions to share more data continues. As payroll and human resources functions within corporations become more intertwined, information services offerings must reflect this interdependency.

Vendors are placing increasing emphasis on integrated functions in the following ways:

- Integration of HR modules with one another
- Closer integration of HR and payroll
- Integration of HR and payroll with financial applications

Increasing emphasis on integration creates challenges for vendors whose product lines consist of multiple applications that have been acquired (rather than "home grown") along the way; for vendors that specialize in HR applications software products to the exclusion of payroll applications; and especially for vendors that specialize in HR. Integration also creates challenges for payroll processing firms that do only payroll.

We can therefore expect more collaboration between, and with, specialist vendors and with systems integrators.

4. More Delivery Mode Offerings

Integration motivates expansion into other delivery modes. As both an offensive and defensive strategy, applications software products vendors and processing services vendors are offering their solutions to clients in an expanding mix of delivery modes.

- For example, over the last several years, Genesys has created a Processing Services Division and a Data Center Division to fill customers' need for integrated payroll processing services and HRIS information.



- Information Science has made a strong shift in recent years toward professional services and systems integration.

The trend toward outsourcing is creating new demand for additional services. Customers are beginning to want to pay vendors to maintain their software rather than hire their own people to do it. There appears to be a trend toward applications software management by the vendor on an ongoing basis.

Revenues from consulting services for Cyborg Systems and Dun & Bradstreet Software now account for 20%-30% of their total U.S. revenues. These services are expanding to include project management, tailoring, on-site education.

As payroll processing services vendors begin to feel the pressures from in-house solutions, they will seek additional sources of revenues, such as from applications software products.

B**Leading and
Emerging Vendors**

Exhibit V-3 lists leading software vendors in this cross-industry sector. Their current predominant platform types are indicated. Essentially all of them are downsizing.

EXHIBIT V-3**Human Resources
Leading Applications Software
Products Vendors**

Vendor	Current Platform
Cyborg	Mainframe
D&B Software	Mainframe
Genesys	Mainframe
Information Science	Mainframe
Integral Systems	Mainframe
PeopleSoft	Client-server
Software Plus	Midrange
Software 2000	Midrange
Spectrum Human Resources	Microcomputer
Tesseract	Mainframe



The market is crowded; at least 100 companies offer human resources and payroll software packages. The smaller companies compete on the basis of price and additional features rather than offering leading-edge technology.

Exhibit V-4 lists leading processing services vendors in this cross-industry sector.

EXHIBIT V-4

**Leading Payroll Processing
Services Vendors**

- ADP
- Paychex
- Control Data Corporation

There are only three nationwide payroll processing services vendors: Automatic Data Processing (ADP), Control Data Business Management Systems, and Paychex. ADP is the clear leader with approximately \$950 million in processing services revenues. Paychex's and CDC's estimated processing services revenues are each in the \$100 million to \$130 million range.

Paychex's focus is to provide basic payroll processing services to small companies (200 or fewer employees); CDC offers a customizable payroll processing service to businesses with 100 or more employees. ADP services the needs of all sizes of companies. Large regional payroll processing services vendors include Automated Payroll Services (Boston), Bank of America (San Francisco), and CRI Computing (Reno).

Additional local vendors number around 1,000 and include banks, accounting firms, and other small independent firms.

Consolidation continues in applications software products and processing services, but not at the rapid pace of previous years. One issue that may accelerate consolidation of processing services firms is accelerated tax collection. Today, a sizeable portion of revenues for these firms is derived from interest income from the tax float; laws may be enacted that would require accelerated tax collection that would remove this source of income, thereby making some processing services firms more vulnerable to acquisition.



Several notable acquisitions made during the 1990/1991 timeframe are:

- Computer Associates acquisition of Information Sciences (July, 1991)
- ADP's purchase of Robert White
- Integral Systems' acquisition of Wright Systems, an AS/400 software vendor with manufacturing and distribution software

C

Vendor Profiles

1. Automatic Data Processing, Inc., One ADP Boulevard, Roseland, NJ 07068, (201) 994-5000

Automatic Data Processing (ADP) was formed in 1949 as Automatic Payrolls, Inc. ADP focuses on four businesses: Employer Services, Brokerage Services, Dealer Services and Automotive Claims.

As it pursued a strategy of broadening the scope of each of these four services, the company divested four other businesses in recent years: real estate processing services, automated teller machine processing services, banking information services, and a quotation services business in Canada.

Within Employer Services, ADP provides an integrated package of services, including payroll processing and financial services, human resources, and benefits services. Payroll services are its largest single form of service and include automatic deposit, quarterly and annual social security and income tax withholding reports, W-2 withholding statements for employees, a complete record of payments for each pay period, and periodic employee historic earnings records. Also included are special statistical and audit reports for management, such as payroll and job cost distribution reports, welfare and pension fund reports, and payroll audit reports.

ADP's Employer Services customer base numbers 3,000 large companies, 120,000 midsized (25-500 employee) accounts, and 125,000 small businesses. Employer Services are provided from over 40 regional processing centers in the U.S. and from centers in London, Rotterdam, Campinas, Sao Paulo, Rio de Janeiro, Toronto, and Montreal.

ADP's fiscal 1990 (ended June) revenues exceed \$1.7 billion, all of which is U.S. based. INPUT estimates that ADP's revenues are derived approximately as follows:

Payroll processing services	55%
Other processing services	20%
Network services	13%
Turnkey systems	12%



Since the early 1960s, ADP has implemented an active acquisition program to diversify from its primary business of providing payroll services. Significant gains have been made in brokerage services to automotive dealers and automotive claims services for automobile insurers and repairers.

2. Bank of America Business Services Division, 5 Thomas Mellon Circle, Suite 300, San Francisco, CA 94134

The Business Services Division of Bank of America provides data processing services to business clients in California, New York, New Jersey, Arizona, Texas and Connecticut. The Business Services revenue base is comparable to that of Control Data's Business Management Services and Paychex.

Payroll management services for Business Services clients include:

- Payroll Plus and Tax Services, and Management Information Services (MIS). MIS is a reporting service offering standard and custom formats for presenting client information derived from payroll data such as workers' compensation, vacation and sick time accrual, EEO reports, job costing, and 401(k). Laser printed reports are available to California clients.
- Personnel Plus and Simply Personnel, interfaced HR information systems, marketed as extensions of the Payroll Plus service.
- PayNet Plus, a PC-based payroll input service for client-site data entry.

Business Services also has payroll services targeted to small businesses, those with less than 25 employees. These are:

- Call Pay, a payroll service for Bank of America account holders, with phone-in of payroll information each pay period.
- Thrifty Pay, a payroll service for non-Bank of America account holders in California and Arizona.

Business Service's original service, Batch Payroll (BPR), is still offered to small and midsized businesses in California. Payroll Plus accounts for the largest portion of the division's revenues.

3. Control Data Corp., Business Management Services Division, P.O. Box 20115, Bloomington, MN 55420, (612) 853-8100

CDC-BMS is the oldest American business and data processing services firm, having begun in 1932 as the Service Bureau Company.



CDC-BMS 1990 revenues were an estimated \$191.3 million, up 12% from the previous year, with a customer base exceeding 30,000 organizations. CDC-BMS provides processing services and software products for payroll, tax filing, human resources management and accounting applications.

Payroll and human resources products and services are:

- Signature Payroll and Tax Filing Services files payroll taxes, monitors labor and job costs, and tracks attendance and absenteeism. The service also provides detailed payroll analysis reports.
- Repertoire Human Resources Management System, available since 1985, allows companies to merge their payroll and personnel records into a single data base of employee information for on-line inquiry, updating and reporting.
- Orchestrator software enables users to enter payroll data via their microcomputers and transmit it to CDC-BMS for processing. It also enables customers to retrieve report and data files for ad hoc reporting or integration with Lotus 1-2-3, dBase and Wordstar.
- Repertoire/Applicant Track is a module that allows companies to access previous candidates' skills, education and experience—then generate a "snapshot" of their qualifications that can be routed to hiring managers for review. The module also helps companies determine the cost of each individual hired, so they can channel time and financial resources to employment or search firms with the most proven value. It also helps companies track and analyze EEO data. As of May 1991, Applicant Track was in beta test.

Approximately 5% of CDC-BMS' revenue is from accounting processing services. BMS also provides benefits claims services and Employee Advisory Resource (EAR), a telephone-based employee assistance program for personal problem resolution.

4. Cyborg Systems, Inc., 2 N. Riverside Plaza, Chicago, IL 60606, (312) 454-1865

Cyborg Systems has been in the software industry since 1974. Its Solution Series includes:

- The Human Resource Management Solution
- The Payroll Solution

In addition, Cyborg also has applications software products for time and attendance recording, fixed assets management, and COBRA compliance and administration. PC Solution is used for downloading modules of the Human Resource Management Solution or Payroll Solution.



The products run on a variety of mainframe and midrange platforms, including platforms from Control Data, Data General, Digital, Hewlett-Packard, Honeywell, IBM, NCR, Prime, Unisys and Wang. Although the majority of growth is in minicomputer-based departmental solutions, Cyborg currently derives more than half of its revenues from mainframe-based solutions.

Cyborg considers its multiplatform and multivendor capabilities a strength and a differentiator. As the company moves forward with PC-based products and client/server offerings, it will capitalize on this broad-based strategy. Client/server components will be DOS Windows 3.0, OS/2 PM and UNIX. At the same time, Cyborg will continue to comply with SAA and NAS.

Cyborg has been building up its Consulting Division over the last several years. Revenue from this division is now 25%-30% of total revenues. Examples of services are:

- Requirements definition
- Project management
- File conversion
- Interfaces
- Technical assistance
- System modifications
- On-site training
- Turnkey implementation

Fiscal 1990 revenues were \$26 million. Non-U.S. revenue is currently 35% of the total and edging up. Approximately one-third of revenue comes from new sales, and two-thirds from ongoing annual license fees, training, consulting and other services.

5. Dun & Bradstreet Software, 3445 Peachtree Rd. N.E., Atlanta, GA 30362, (404) 239-2000

Dun & Bradstreet Software (DBS), a company of The Dun & Bradstreet Corporation, was formed in March 1990 by the merger of Management Science America (MSA) and McCormack & Dodge (M&D).

Current DBS human resources product offerings include:

- Expert Series (former MSA product)—payroll/personnel packages for mainframes
- Millennium (former McCormack & Dodge product)—human resource systems for IBM and compatible mainframes.
- A DB2 product offering that was delivered in late 1990.



- The Human Resource (THR)—a standalone PC-based personnel/payroll system; also available for a PC LAN environment.
- International personnel and payroll systems marketed outside North America, which provide a range of business applications required by personnel, benefits, employee relations, payroll, and accounting departments.
- Information Associates' Payroll/Personnel for the higher education sector.

DBS' approach to its next generation of human resources solutions is to incrementally deliver a single client/server product line for ease of migration for current customers. Components of the client/server strategy include relational SQL-based technology, graphical user interfaces—initially using Microsoft Windows 3.0—and groupware enabled functionality. Its first module will be flexible benefits, to be available in early 1992.

In addition, DBS will continue to enhance its current product lines. Future plans also call for UNIX and SAA compliancy, object-oriented design, and a global offering for multinational corporations.

As it moves forward, DBS' challenge is to explain how it intends to merge its multiple product lines and how it will migrate its existing customers to its next-generation product.

DBS has been adding staff to its Consulting Division; services revenue has grown 25% per year over the last two years and accounts for an estimated 20% of North American revenues.

6. Genesys Software Systems, Inc., Five Branch Street, Methuen, MA 01844, (508) 685-5400

Genesys Software Systems, founded in 1981, provides payroll, human resources, defined benefits, defined contribution, human resource planning, and flexible benefits applications software products. Genesys software products, up until recently, all ran on IBM mainframes.

In December 1990 Genesys introduced an enhanced Human Resource System featuring applicant tracking, staffing, wage and salary analysis, training and development, turnover analysis, benefits administration, government compliance and union regulations. It includes new screens, reports and fields, enhanced graphics, PC upload/download features and Windows 3.0.

Genesys recently introduced a standalone PC version and PC LAN versions of its products. It also now has DB2 versions of all of its products. The new Human Resource System can run on a full range of plat-



forms from standalone PCs to mainframes. Genesys has under wraps a PC-based client/server product with all the functionality of the enhanced Human Resource System.

In addition to applications software products, Genesys has gotten involved in two other delivery modes over the last several years:

- Processing Services Division, formed in 1988, provides benefits and payroll processing services. Genesys is now competing head-to-head with ADP in the category of companies with more than 400 employees.
- Data Center Division, also formed in 1988, provides systems operations for the customer's Genesys Human Resource software license at Genesys Data Center, either temporarily or on a long-term basis.

Genesys' strategy at this time does not include UNIX. Estimated revenues for fiscal 1991 (6/91) are \$15 million.

7. Integral Systems, 2185 North California Boulevard, Walnut Creek, CA 94596-9496, (415) 939-3900

Integral Systems' strategy is to:

- Continue its SAA direction, offering a complete portfolio of financial and human resource management software across all of IBM's SAA-compliant platforms
- Increase the number of its mainframe-based products
- Continue to modernize and broaden its AS/400 product line

Mainframe products include:

Personnel Administration
Payroll Processing
Applicant Management
Position Control
Benefits Administration
Pension Administration
Flexible Compensation

Integral expects its AS/400 software products to increase from their current contribution of 20% of revenues while mainframe-based software products become a smaller portion of the whole. The company's revenue from services is also expected to take up the slack in mainframe software product sales.



Integral has in beta test for release later this year HR Timekeeper, a distributed payroll time entry and reporting system based on an SQL database.

Most of Integral's PC-based applications address specialized needs but tie into a shared mainframe data base. Examples are CAAPS for Affirmative Action management, JobTrak for succession planning, OrgChart for organizational planning and analysis, and Workbench for salary planning and administration.

Integral also offers HRI, a PC workstation-based solution that can interact with a mainframe, for organizations that want to delegate HR record keeping and reporting responsibility to individual divisions or departments but still support the central data base.

Integral's HR Minder enables managers to monitor the HR data base for events—such as upcoming performance reviews—and receive immediate notification for tracked events.

In response to market need for integrated products, Integral is now positioning itself as a "core business" company rather than a provider of only human resources or only accounting. During 1990, Integral merged its divisions so that all key product areas—human resources, accounting/financial management, and midrange—all report to a single product development vice president. Likewise, all products are now handled by a single sales force and service organization.

During 1990, Integral completed the acquisition of Wright Systems (Plymouth, MI), an AS/400 vendor with manufacturing and distribution software, for slightly less than \$10 million. Wright's product line is entirely generated by the CASE tool SignOn, which enhances ease of customization of the software.

INPUT estimates revenues for Integral Systems at \$68 million for calendar 1990—up about 4% over calendar 1989. The Wright acquisition added approximately \$10 million to Integral's revenues of \$68 million.

8. Oracle, 275 Shoreline Drive, Redwood City, CA 94065, (415) 506-7000

Over the last several years, Oracle's revenues have grown so rapidly that it is now in the big league of software vendors, along with the likes of IBM and Computer Associates, and has revenues close to \$1 billion. But this past year Oracle's reputation suffered from aggressive sales tactics, product bugs, and unconventional accounting practices, not to mention a slowdown in demand for its flagship product, ORACLE RDBMS.



During 1988 and 1989, Oracle expanded its offerings to include financial, manufacturing and office automation applications software products and systems integration services. In February 1990, it introduced Oracle Personnel—originally developed and marketed in Europe—to the U.S. marketplace. It is billed as a multinational solution with country-by-country features. Oracle Payroll, available in Europe, will be introduced to the U.S. market by the end of 1991.

Oracle Personnel and Oracle Payroll can be integrated closely with Oracle Financials. The products run on multiple vendors' proprietary platforms, from mainframe to workstation and personal computer, and on their versions of UNIX as well as SCO UNIX.

Oracle's differentiator is its multivendor and multiplatform capabilities and the degree of integration between human resources/payroll/benefits and financial applications. Oracle's products run on 27 different platforms. The use of Oracle's own CASE tools, and of course its use of its own ORACLE RDBMS, are also differentiators. Customers can develop their own systems around Oracle's products using Oracle CASE.

Oracle is striving to put its Applications Group on the map in the U.S. market. Oracle is one of the few large companies with strong UNIX applications software products, though they are of limited breadth. Revenue for the Applications Group was \$55 million, 6% of fiscal 1990 revenues of \$972 million; most of the \$55 million was from accounting applications software products.

Forty-nine percent of Oracle's 1990 fiscal revenues are non-U.S. and this percentage is increasing.

9. Paychex, 911 Panorama Trail South, Rochester, NY 14625-0397, (716) 385-6666

Paychex was formed in 1979 through the consolidation of 17 corporations engaged in providing computerized payroll processing services. Its primary business is payroll and payroll tax preparation.

Paychex has reorganized some of its services into a new division, Human Resource Services, which provides employee handbooks and update service; Section 125 cafeteria plans; and benefits including health and dental, disability, workman's compensation and group term life insurance. Paychex acts as a general agent and broker for insurance companies on behalf of its clients.

In 1990, Paychex added Taxpay to its services, an automatic collection and depositing of payroll tax liabilities and electronic filing of associated tax returns. Another way Paychex has expanded over the last several



years is by increasing its market coverage to include companies with up to 200 employees; it had originally targeted companies with 100 or fewer employees.

Paychex' fiscal 1990 (year ended May 31, 1990) revenues reached \$120 million, an 18% increase over fiscal 1989 revenues of \$101.2 million.

10. PeopleSoft, 1600 South Main Street, Walnut Creek, CA 94596, (415) 946-9460

PeopleSoft was founded by the co-founder and former chairman of Integral. A lawsuit is still pending wherein Integral is suing PeopleSoft with copyright infringement and misappropriation of trade secrets. This does not appear to be having a detrimental effect on PeopleSoft.

PeopleSoft HRMS includes payroll, personnel and benefits. It has a Microsoft Windows 3.0 graphical user interface and supports SQL data base systems such as SQL Server, Gupta, Oracle and DB2. The product also complies with SAA. Support is planned for OS/1 and Presentation Manager.

PSHRMS also has several report writing options and PeopleTools, and a set of proprietary customization facilities. PSHRMS also has a kiosk module for employee access to benefits and selected personal data. PSHRMS is exemplary of the new generation of human resources products that are beginning to appear on the market. It was built from the ground up.

PSHRMS operates on a variety of computers (LANs, midranges, and IBM mainframes) and data bases (DB2, SQLBase, SQL Server, and Oracle). As an IBM Business Partner, PeopleSoft conforms to IBM's SAA.

PeopleSoft has had the client/server arena to itself for over one year; this year, however, will see the introduction of client/server versions from most major competitors. It is not clear that this one-year lead is a major advantage in the long term, as INPUT research shows the majority of potential buyers are not ready to embrace client/server technology. PeopleSoft is selling to "early adopters."

PeopleSoft has the advantage of not having to please an existing customer base. On the other hand, however, the company is being accused of "forcing" a high-end attitude by not offering any alternatives to client/server technology.

In April, 1991, PeopleSoft made a number of public announcements indicative of the company's plans for future growth:



- Four regional sales and support offices have been formed to serve the northeast, mid-Atlantic, midwest, and southeast regions. The company also has offices in Canada and plans to open a European office later this year.
- PeopleSoft will receive five million dollars in venture capital funding from Norwest Venture Capital to accelerate development of a new line of financial applications. A general ledger application, the first financial product planned, has been in development since 1989 when PeopleSoft's Human Resources Management System (PSHRMS) was released. Accounts payable and accounts receivable products are also planned.
- Development and marketing agreements have been formed with Hewlett-Packard and Microsoft.

Under the agreement with HP, the two companies will team to develop an HP Allbase/SQL server version of PeopleSoft products for the HP3000. HP will use the PeopleSoft internally, and the HP sales organization will market PSHRMS to HP3000 clients and prospects.

Under the Microsoft agreement, PeopleSoft will be a member of Microsoft's SQL Server Industry Specialist Program. Microsoft is implementing PSHRMS for internal use, and will join PeopleSoft's fall 1991 sales seminar series.

PeopleSoft is also a value-added reseller (VAR) for both Oracle and Sybase.





Conclusions and Recommendations







Conclusions and Recommendations

A

Industry and IS Market Conclusions

Human resources is a solid cross-industry sector, relatively unaffected by the trend toward specialization or the make versus buy decision. Due to the many modifications and updates required for both human resources and payroll processing it will remain an "outsourced" application solution set.

User expenditures for IS delivery modes sold to the human resources cross-industry sector will grow from \$2.4 billion in 1991 to \$3.8 billion in 1996, a 9% CAGR. The largest delivery mode remains processing services, which is forecast to grow at a modest 8% CAGR to reach \$2.5 billion in user expenditures by 1996. Applications software products will grow at a slightly higher 12% CAGR; turnkey systems continues its decline.

The most profound driving forces for this cross-industry sector over the next five years are:

- Need for flexibility (customization)
- Need for distributed data
- Need for integration

These three drivers impact all three delivery modes in different ways and in varying degrees. For processing services, these drivers mean more services—perhaps even more delivery mode offerings—and PC front ends in increasingly user friendly and customizable forms.

For applications software products, the drivers will force vendors to continue to add more customization tools to their offerings, SQL RDBMSs, and multiple offerings from mainframe and minicomputer to PC LAN and client/server.



The era of "have it your way" is emerging in the human resources cross-industry sector. Flexibility is a key—in terms of where data is made accessible, what size platform and what vendors' platforms applications software products will run on, customizable features, and delivery mode offerings.

Integration presents challenges and opportunities for vendors and users alike. Processing services, in order to continue to compete effectively against applications software firms, will have to be able to offer integrated HR/payroll processing services. For turnkey systems dedicated to HR, integration is fatal.

B

User Issues and Recommendations

Exhibit VI-1 outlines INPUT's recommendations to users.

EXHIBIT VI-1

Human Resources Cross-Industry Sector User Recommendations

- Be willing to experiment
- Gradual migration to downsized solutions
- Select the application software product first, hardware platform second

Because there will be many variations of client/server applications software products on the market and types of hardware configurations on which they run, users will need to wade through their own requirements and be willing to experiment with solutions. The term client/server means different things to different vendors, making it a challenge for the user to understand what the true benefits of any given system might be.

Effective implementation of downsized solutions—especially client-server solutions—will require effective LAN operations and network management capabilities and possibly the purchase of new hardware—386- or 486-based personal computers or RISC workstations—as well. Thus migrating to downsized solutions will initially be expensive and the cost benefits may not be obvious for some time.

The hardware platform is becoming less important than the applications software product, as standardization in hardware is ahead of standardization in software. Additionally, hardware price/performance ratios are still improving so rapidly that users will not want to be locked into a



software solution that only works on one type of platform. Solutions that offer the most flexibility to the user in terms of customization, integration and data availability—as well as the hardware platforms they operate on—make the most sense.

C**IS Vendor Issues and Recommendations**

Exhibit VI-2 summarizes INPUT's overall recommendations to vendors serving the human resources cross-industry sector.

EXHIBIT VI-2**Human Resources Cross-Industry Sector
IS Vendor Recommendations**

- Provide the most alternatives that make sense
- Do not expect overnight success with client/server
- Develop systems integration point of view
- Prepare to do battle

The issues vendors face during this transition include:

- Product migration—Agility of vendor product migration to client/server and UNIX
- How to move customers forward to a new product line. Providing a variety of approaches and not forsaking the previously existing product line is a sensible approach.
- How to move the sales force forward. Different sales forces and new distribution channels may be required.
- Pricing—Another fundamental issue is pricing strategy for client/server applications software products. Traditionally, pricing has been according to operating system or platform size—the smaller the size, the lower the price. Vendors must remain flexible as they evaluate various pricing schemes.

Vendors will have their hands full and must be prepared to protect their current customer base and at the same time move them forward to their new products.





Appendix





Forecast Data Base

EXHIBIT A-1

Human Resources Sector User Expenditure Forecast by Delivery Mode, 1990-1996

Delivery Modes	1990 (\$M)	Growth 90-91 (%)	1991 (\$M)	1992 (\$M)	1993 (\$M)	1994 (\$M)	1995 (\$M)	1996 (\$M)	CAGR 91-96 (%)
Sector Total	2,248	9	2,454	2,793	2,973	3,228	3,492	3,794	9
<i>Processing Services</i>	1,523	10	1,676	1,844	2,030	2,180	2,310	2,460	8
- Transaction Processing	1,523	10	1,676	1,844	2,030	2,180	2,310	2,460	8
- Utility Processing	-	-	-	-	-	-	-	-	-
- Other Processing	-	-	-	-	-	-	-	-	-
<i>Turnkey Systems</i>	82	2	84	86	88	89	90	92	2
<i>Applications Software</i>	643	8	694	763	855	959	1,092	1,242	12
- Mainframe	258	3	265	278	292	307	322	338	5
- Minicomputer	242	6	256	275	298	322	348	376	8
- Workstation/PC	144	20	173	210	265	330	422	528	25



EXHIBIT A-2

Human Resources Sector 1991 MAP Data Base Reconciliation

Delivery Modes	1990 Market				1995 Market				90-95 CAGR per data 90 rpt (%)	90-95 CAGR per data 91 rpt (%)
	1990 Report (Fcst) (\$M)	1991 Report (Actual) (\$M)	Variance from 1990 Report		1990 Report (Fcst) (\$M)	1991 Report (Fcst) (\$M)	Variance from 1990 Report			
			(\$M)	(%)			(\$M)	(%)		
Total	2,248	2,248	-	-	3,640	3,492	148	(4)	10	9
Processing Services	1,523	1,523	-	-	2,453	2,310	143	(6)	10	8
Turnkey Systems	82	82	-	-	90	90	-	-	2	2
Applications Software	643	643	-	-	1,097	1,092	5	-	11	11
Systems Operations	-	-	-	-	-	-	-	-	-	-
Systems Integration	-	-	-	-	-	-	-	-	-	-
Professional Services	-	-	-	-	-	-	-	-	-	-
Network Services	-	-	-	-	-	-	-	-	-	-



About INPUT

INPUT provides planning information, analysis, and recommendations for the information technology industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

Subscription services, proprietary research/consulting, merger/acquisition assistance, and multiclient studies are provided to users and vendors of information systems and services. INPUT specializes in the software and services industry which includes software products, systems operations, processing services, network services, systems integration, professional services, turnkey systems, and customer services. Particular areas of expertise include CASE analysis, information systems planning, and outsourcing.

Many of INPUT's professional staff members have more than 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed as a privately held corporation in 1974, INPUT has become a leading international research and consulting firm. Clients include more than 100 of the world's largest and most technically advanced companies.

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